

SEQUENCE LISTING

<110> KIM, Jong-Bae

<120> CRUDE EXTRACT FROM Viscum album coloratum, AND PROTEINS
AND LECTINS ISOLATED THEREFROM

<130> Korean Mistletoe Lectin

<140> 09/627,165

<141> 2000-07-27

<160> 16

<210> 1

<211> 762

<212> DNA

<213> Viscum album coloratum

<220>

<221> misc_feature

<400> 1

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cgctcagtcta cgateccctg ctccggatgcg caaagatttg tgttggtgga actcaccaat 180
cagggggggag actcgatcac ggccgccatc gacgttacta acctgtacgt ggtgggttac 240
caagcaggcg accaatccta ctttttgcgc gacgcaccag acggcgcgga aaggcatctc 300
ttcaccggca ccaccagatc ctccctccca ttaccggaa gctacacaga tctggagcga 360
ttcgccggtc atagggacca gatccctctg ggtagagagg aactcattca atccgtctcg 420
gcccttcgtt ttccgggcag caacactcgt gcccaagctc gttcctttat catctcatt 480
cagatgatct ccgaggccgc cagattcaat cccatcttat ggagggtctg ccaatacatt 540
agcagtgggg ggtcatttct gccagacacg tacattctcc agctggagac gagttggggg 600
caacaatcca cgcaagtca gactcgacg gatggcggtt ttaataaccc aattcggttg 660
actatatcca ctggtgtctt cgtgacgttg agcaatgttc ggcacgtgat cgccagctta 720
gcgatcatgt tgtttgtatg cgaggaccgg ccatctctct ct 762

<210> 2

<211> 254

<212> PRT

<213> Viscum album coloratum

<221> VARIANT

<400> 2

Tyr Glu Arg Leu Arg Leu Arg Val Thr His Gln Thr Thr Gly Asp Glu
1 5 10 15

Tyr Phe Arg Phe Ile Thr Leu Leu Arg Asp Tyr Val Ser Ser Gly Ser
20 25 30

Phe Ser Asn Glu Ile Pro Leu Leu Arg Gln Ser Thr Ile Pro Val Ser
35 40 45

Asp Ala Gln Arg Phe Val Leu Val Glu Leu Thr Asn Gln Gly Gly Asp
50 55 60

Ser Ile Thr Ala Ala Ile Asp Val Thr Asn Leu Tyr Val Val Ala Tyr
65 70 75 80

Gln Ala Gly Asp Gln Ser Tyr Phe Leu Arg Asp Ala Pro Asp Gly Ala
85 90 95

Glu Arg His Leu Phe Thr Gly Thr Thr Arg Ser Ser Leu Pro Phe Thr
100 105 110

Gly Ser Tyr Thr Asp Leu Glu Arg Phe Ala Gly His Arg Asp Gln Ile
115 120 125

Pro Leu Gly Arg Glu Glu Leu Ile Gln Ser Val Ser Ala Leu Arg Phe
130 135 140

Pro Gly Ser Asn Thr Arg Ala Gln Ala Arg Ser Phe Ile Ile Leu Ile
145 150 155 160

Gln Met Ile Ser Glu Ala Ala Arg Phe Asn Pro Ile Leu Trp Arg Ala
165 170 175

Arg Gln Tyr Ile Ser Ser Gly Gly Ser Phe Leu Pro Asp Thr Tyr Ile
180 185 190

Leu Gln Leu Glu Thr Ser Trp Gly Gln Gln Ser Thr Gln Val Gln His
195 200 205

Ser Thr Asp Gly Val Phe Asn Asn Pro Ile Arg Leu Thr Ile Ser Thr
210 215 220

Gly Val Phe Val Thr Leu Ser Asn Val Arg Asp Val Ile Ala Ser Leu
225 230 235 240

Ala Ile Met Leu Phe Val Cys Glu Asp Arg Pro Ser Ser Ser
245 250

<210> 3

<211> 762

<212> DNA

<213> Viscum album coloratum

<221> misc_feature

<400> 3

tacgagaggc taagactcag agttacgcat caaaccacgg gcgaccaata ttcaagttc 60
atcacgcttc tccgagatca tgtctcaagc ggaagcttgt ccaatcaaat accactcttg 120
cggcagtgcta ctgtcccgt ctcggatacg cagagatttg tgttggtgga actcagcaat 180
caggggggag actcgatcac ggccgccatc gacgttacca atctgtacgt ggtggcttac 240
caagcaggca accaatccta cttttgcgc gacgcacctc gcggcgcgga aacgtatctc 300
ttaccggca ccaccgata ctctcctcca ttcaacggaa gctaccctga tctggagcga 360
tacgccggac atagggacca gatccctctc ggtatagacc aactcattca atccgtctcg 420
gcccttcgtt ttccgggcag caacactcgt gcccaagctc gttcctttat cactctcatt 480
cagatgatct ccgaggccgc cagattcaat cccatcttat ggagggctcg ccaatacatt 540
agcagtgggg ggtcatttct gccagacacg tacattctcc agctggagac gattggggg 600
caacaatcca cgcaagtcca gactcgacg gatggcgttt ttaataaccc aattcggttg 660
actatatcca ctggtgtctt cgtgacgttg agcaatgttc gcgacgtgat cgccagcyta 720
gcgatcatgt tgtttgatg cgaggaccgg ccatcttctt ct 762

<210> 4

<211> 254

<212> PRT

<213> Viscum album coloratum

<220>

<221> misc_feature

<222> 718

<223> Xaa = any amino acid

<400> 4

Tyr Glu Arg Leu Arg Leu Arg Val Thr His Gln Thr Thr Gly Asp Gln
 1 5 10 15
 Tyr Phe Lys Phe Ile Thr Leu Leu Arg Asp His Val Ser Ser Gly Ser
 20 25 30
 Leu Ser Asn Gln Ile Pro Leu Leu Arg Gln Ser Thr Val Pro Val Ser
 35 40 45
 Asp Thr Gln Arg Phe Val Leu Val Glu Leu Ser Asn Gln Gly Gly Asp
 50 55 60
 Ser Ile Thr Ala Ala Ile Asp Val Thr Asn Leu Tyr Val Val Ala Tyr
 65 70 75 80
 Gln Ala Gly Asn Gln Ser Tyr Phe Leu Arg Asp Ala Pro Arg Gly Ala
 85 90 95
 Glu Thr Tyr Leu Phe Thr Gly Thr Thr Arg Ser Ser Leu Pro Phe Asn
 100 105 110
 Gly Ser Tyr Pro Asp Leu Glu Arg Tyr Ala Gly His Arg Asp Gln Ile
 115 120 125
 Pro Leu Gly Ile Asp Gln Leu Ile Gln Ser Val Ser Ala Leu Arg Phe
 130 135 140
 Pro Gly Ser Asn Thr Arg Ala Gln Ala Arg Ser Phe Ile Ile Leu Ile
 145 150 155 160
 Gln Met Ile Ser Glu Ala Ala Arg Phe Asn Pro Ile Leu Trp Arg Ala
 165 170 175
 Arg Gln Tyr Ile Ser Ser Gly Gly Ser Phe Leu Pro Asp Thr Tyr Ile
 180 185 190
 Leu Gln Leu Glu Thr Ser Trp Gly Gln Gln Ser Thr Gln Val Gln His
 195 200 205
 Ser Thr Asp Gly Val Phe Asn Asn Pro Ile Arg Leu Thr Ile Ser Thr
 210 215 220
 Gly Val Phe Val Thr Leu Ser Asn Val Arg Asp Val Ile Ala Ser Xaa

225 230 235 240
Ala Ile Met Leu Phe Val Cys Glu Asp Arg Pro Ser Ser Ser
245 250

<210> 5
<211> 768
<212> DNA
<213> Viscum album coloratum
<221> misc_feature

<400> 5

225 230 235 240
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atcaagcttc tccgagactc tgtctcaagc ggaagctttt ccaatgacat accgctcctg 120
cctccgtcaa tcccggtctc ctctgcgcag agatttgtgt tggaggaaact cacaatcag 180
tgggaaagt gggaagactc gatcacggcc gccatcgacg ttaccaatct gtacgtggtg 240
gcttaccag caggcgacca atctacttt ttgcgcgacg caccagacgg cgcgaaagg 300
catctcttca ccggcaccac cagatcctct ctctcttca acggaagcta cgctgatctg 360
gagcggtagc ccggacatag ggaccggatc cctctgggta gagagccact catacgatec 420
gtctcggcgc ttgattatcc cggcggcagc acgcgcgccc aagccagttc cattattatc 480
gtcattcaga tgatctccga ggcgccaga ttcaatccca tctatggag ggctcgccaa 540
tacattaaca gtggggtgtc atatcttca gacgtgtaca tgctggagct ggaggcgagt 600
tggggccaac aatcgaccca agtcacagcag tcgaccgatg gcgttttaa taaccaatt 660
cggttgggta tatccaccgg caacttcgtg tgggtgagca atgttcgca cgtgatcgcc 720
agcttgggga tcatgtgtt tgtatgcagg gaccggtcat ctcccct 768

<210> 6
<211> 256
<212> PRT
<213> Viscum album coloratum
<221> VARIANT

<400> 6

Tyr Glu Arg Leu Arg Leu Arg Val Thr His Gln Thr Thr Gly Asp Glu
1 5 10 15

Tyr Phe Arg Phe Ile Lys Leu Leu Arg Asp Ser Val Ser Ser Gly Ser
20 25 30

Phe Ser Asn Asp Ile Pro Leu Leu Pro Pro Ser Ile Pro Val Ser Ser
35 40 45

Ala Gln Arg Phe Val Leu Val Glu Leu Thr Asn Gln Leu Gly Lys Trp
50 55 60

Glu Asp Ser Ile Thr Ala Ala Ile Asp Val Thr Asn Leu Tyr Val Val
65 70 75 80

Ala Tyr Gln Ala Gly Asp Gln Ser Tyr Phe Leu Arg Asp Ala Pro Asp
85 90 95

Gly Ala Glu Arg His Leu Phe Thr Gly Thr Thr Arg Ser Ser Leu Pro
100 105 110

Phe Asn Gly Ser Tyr Ala Asp Leu Glu Arg Tyr Ala Gly His Arg Asp
115 120 125

Arg Ile Pro Leu Gly Arg Glu Pro Leu Ile Arg Ser Val Ser Ala Leu
130 135 140

Asp Tyr Pro Gly Gly Ser Thr Arg Ala Gln Ala Ser Ser Ile Ile Ile
145 150 155 160

Val Ile Gln Met Ile Ser Glu Ala Ala Arg Phe Asn Pro Ile Leu Trp
165 170 175

Arg Ala Arg Gln Tyr Ile Asn Ser Gly Val Ser Tyr Leu Pro Asp Val
180 185 190

Tyr Met Leu Glu Leu Glu Ala Ser Trp Gly Gln Gln Ser Thr Gln Val
195 200 205

Gln Gln Ser Thr Asp Gly Val Phe Asn Asn Pro Ile Arg Leu Gly Ile
210 215 220

Ser Thr Gly Asn Phe Val Trp Leu Ser Asn Val Arg Asp Val Ile Ala
225 230 235 240

Ser Leu Gly Ile Met Val Phe Val Cys Arg Asp Arg Ser Ser Ser Pro
245 250 255

<210> 7

<211> 797

<212> DNA

<213> Viscum album coloratum

<221> misc_feature

<400> 7

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agtccaactc cgatcagaat cagctgtgga cgatcagaag ggatggaacc attcgatcta 180
atggaagggtg ctgacgacc tatgggtata ctgcgggcag ctatataatg atctacgact 240
gtaatagagg ggggtgggac ctactactt ggcagataag gggcaatgga atcatcctta 300
atccaagatc catgatggtg atcgggaacac catccgggag ccgcggaacc cgtggcacta 360
cttttactct gcaaacactg gggtactaat taggacaggg ctggcttgcc agcaatgata 420
ccgctctctg cgaggttaacc atatatggtt tccgcgatca ttgcatggaa actagtggag 480
ggaaagtgtg gggtgggact tgtgtgagt gcaagcagaa ccaaagatgg gctttgtacg 540
gggatggttc cattcgcccg aaaccttacc aagaccaatg cctcacctct caggagact 600
ccgtagatc cgtaatcaat ttatttagct gcaccgctgg atcgccaagg caacgatggg 660
tatttaccaa taaaggggcc atttgaatt taaagaatag gttggccatg gatgtggcgg 720
aatcaaatcc aagcctccgc cgaataatca tctttcagt cactggaaat ccaaatcaaa 780
tgtggttcc cgtgccca 797

<210> 8

<211> 266

<212> PRT

<213> Viscum album coloratum

<221> VARIANT

<400> 8

Asp Asp Val Thr Cys Thr Thr Ser Glu Pro Thr Val Arg Phe Val Gly
1 5 10 15

Arg Asn Gly Leu Cys Leu Asp Val Pro Glu Gly Asp Tyr His Asp Gly
20 25 30

Ser Arg Ile Gln Leu Trp Pro Cys Lys Ser Asn Ser Asp Gln Asn Gln
35 40 45

Leu Trp Thr Ile Arg Arg Asp Gly Thr Ile Arg Ser Asn Gly Arg Cys
50 55 60

Leu Thr Thr Tyr Gly Tyr Thr Ala Gly Ser Tyr Ile Met Ile Tyr Asp
65 70 75 80

Cys Asn Arg Gly Gly Trp Asp Leu Thr Thr Trp Gln Ile Arg Gly Asn

85 90 95
 Gly Ile Ile Leu Asn Pro Arg Ser Met Met Val Ile Gly Thr Pro Ser
 100 105 110
 Gly Ser Arg Gly Thr Arg Gly Thr Thr Phe Thr Leu Gln Thr Leu Gly
 115 120 125
 Tyr Ser Leu Gly Gln Gly Trp Leu Ala Ser Asn Asp Thr Ala Pro Arg
 130 135 140
 Glu Val Thr Ile Tyr Gly Phe Arg Asp His Cys Met Glu Thr Ser Gly
 145 150 155 160
 Gly Lys Val Trp Val Gly Thr Cys Val Ser Gly Lys Gln Asn Gln Arg
 165 170 175
 Trp Ala Leu Tyr Gly Asp Gly Ser Ile Arg Pro Lys Pro Tyr Gln Asp
 180 185 190
 Gln Cys Leu Thr Ser Gln Gly Asp Ser Val Arg Ser Val Ile Asn Leu
 195 200 205
 Phe Ser Cys Thr Ala Gly Ser Pro Arg Gln Arg Trp Val Phe Thr Asn
 210 215 220
 Lys Gly Ala Ile Leu Asn Leu Lys Asn Arg Leu Ala Met Asp Val Ala
 225 230 235 240
 Glu Ser Asn Pro Ser Leu Arg Arg Ile Ile Ile Phe Ser Val Thr Gly
 245 250 255
 Asn Pro Asn Gln Met Trp Leu Pro Val Pro
 260 265

<210> 9
 <211> 789
 <212> DNA
 <213> Viscum album coloratum
 <221> misc_feature
 <400> 9

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aagccaaca ccgataggaa tcagctgtgg acgatcagaa gggatggaac cattcgatct 180
aatagcaagt gcttgaccac ctatggctat cgtgatggca tgtatgtaat gatctacaac 240
tgtaatacgg ccgtgcggga ggccactatt tggcaaatat gggaaaatgg aaccatcggt 300
aatccaagat ccagtctggt actgggagca gcatctggaa acagccgcac taggcttact 360
gtgcaaacac aggtctactc gttgggacag ggctggcttg ccagcaatga taccgcccct 420
cgcgaggtaa ccatatacgg attccgtgac cttgcatgg aagctaattg atcgagtgtg 480
tgggtggaga ctgtgtgag taacaagcag aacaaaaat gggctttgta cggggatggg 540
tctatacgcc ccaaacaaaa ccgaaaccaa tgcctcacct gccagaaaga ctccgtttca 600
accgtaatca atattgtag ctgcagcga ggatcgtctg ggcagcgaat ggtgtttacc 660
aataaaggga ccattttgaa ttaagaat gggttggta tggatgtggc gcaatcaaat 720
ccaagcctcc gccgaataat catctacca gccaccggaa agcctaataa aatgtggctt 780
cccgtgcca

<210> 10
<211> 263
<212> PRT
<213> Viscum album coloratum
<221> VARIANT

<400> 10
Asp Asp Gly Thr Cys Thr Ala Ser Glu Pro Thr Val Arg Ile Val Gly
1 5 10 15
Leu Asn Gly Leu Cys Val Asp Val Arg Asn Gly Lys Phe His Asp Gly
20 25 30
Asn Pro Ile Gln Leu Trp Pro Cys Lys Ser Asn Thr Asp Arg Asn Gln
35 40 45
Leu Trp Thr Ile Arg Arg Asp Gly Thr Ile Arg Ser Asn Ser Lys Cys
50 55 60
Leu Thr Thr Tyr Gly Tyr Arg Asp Gly Met Tyr Val Met Ile Tyr Asn
65 70 75 80
Cys Asn Thr Ala Val Arg Glu Ala Thr Ile Trp Gln Ile Trp Glu Asn
85 90 95
Gly Thr Ile Val Asn Pro Arg Ser Ser Leu Val Leu Gly Ala Ala Ser
100 105 110

Gly Asn Ser Arg Thr Arg Leu Thr Val Gln Thr Gln Ala Tyr Ser Leu
115 120 125

Gly Gln Gly Trp Leu Ala Ser Asn Asp Thr Ala Pro Arg Glu Val Thr
130 135 140

Ile Tyr Gly Phe Arg Asp Leu Cys Met Glu Ala Asn Gly Ser Ser Val
145 150 155 160

Trp Val Glu Thr Cys Val Ser Asn Lys Gln Asn Gln Lys Trp Ala Leu
165 170 175

Tyr Gly Asp Gly Ser Ile Arg Pro Lys Gln Asn Arg Asn Gln Cys Leu
180 185 190

Thr Cys Gln Lys Asp Ser Val Ser Thr Val Ile Asn Ile Val Ser Cys
195 200 205

Ser Ala Gly Ser Ser Gly Gln Arg Trp Val Phe Thr Asn Lys Gly Thr
210 215 220

Ile Leu Asn Leu Lys Asn Gly Leu Val Met Asp Val Ala Gln Ser Asn
225 230 235 240

Pro Ser Leu Arg Arg Ile Ile Ile Tyr Pro Ala Thr Gly Lys Pro Asn
245 250 255

Gln Met Trp Leu Pro Val Pro
260

<210> 11

<211> 789

<212> DNA

<213> Viscum album coloratum

<221> misc_feature

<400> 11

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tgcgtcgacg tccgacatgg aaaattccac gatggaaatc cgatacagtt gtggccctgc 120
aagtccaaca ccgataggaa tcagctgtgg acgatcagaa gggatggaac cattcgatct 180
aatagcaagt gcttgaccac ctatggctat cgtgatggca tgtatgcat gatctacaac 240
tgtaatacgg ccgtgcggga ggccactatt tggcaaatat gggaatatgg aaccatcggt 300

aatccaaaat ccagtctggt actgggagca gcactcggaa gcagccgcac tacgcttact 360
gtgcaaacac aggcttactc gttgggacag ggctggcttg ccagccatga tacagcccct 420
cgcgaggtaa ccatacagg ttctgtgac ctttgcattg aagctaattg atcgagtgtg 480
tkggtggaga cttgtgtgag tcacagcag aacaaaaat gggctttgta cggggatggt 540
tctatacgcc ccaaacaaaa ccgaaaccaa tgcctcacct gccagaaaaga ctccgtttca 600
accgtaatca atattgttag ctgcagcgca ggcagcgtctg ggcagcgtat ggtgtttacc 660
aataaaggga ccattttgaa tttaaagaat gggttggtcc tggatgtggc gcaatcaaat 720
ccaagcctcc gccgaataat catctacca gccaccggaa agcctaataa aatgtggctt 780
cccgtgcca 789

<210> 12
<211> 263
<212> PRT
<213> Viscum album coloratum

<220>
<221> misc_feature
<222> 161
<223> Xaa = any amino acid

<400> 12
Asp Asp Gly Thr Cys Thr Pro Ser Glu Pro Thr Val Trp Ile Val Gly
1 5 10 15
Leu Asn Gly Leu Cys Val Asp Val Arg His Gly Lys Phe His Asp Gly
20 25 30
Asn Pro Ile Gln Leu Trp Pro Cys Lys Ser Asn Thr Asp Arg Asn Gln
35 40 45
Leu Trp Thr Ile Arg Arg Asp Gly Thr Ile Arg Ser Asn Ser Lys Cys
50 55 60
Leu Thr Thr Tyr Gly Tyr Arg Asp Gly Met Tyr Val Met Ile Tyr Asn
65 70 75 80
Cys Asn Thr Ala Val Arg Glu Ala Thr Ile Trp Gln Ile Trp Glu Asn
85 90 95
Gly Thr Ile Val Asn Pro Lys Ser Ser Leu Val Leu Gly Ala Ala Ser

100 105 110
 Gly Ser Ser Arg Thr Thr Leu Thr Val Gln Thr Gln Ala Tyr Ser Leu
 115 120 125
 Gly Gln Gly Trp Leu Ala Ser His Asp Thr Ala Pro Arg Glu Val Thr
 130 135 140
 Ile Tyr Gly Phe Arg Asp Leu Cys Met Glu Ala Asn Gly Ser Ser Val
 145 150 155 160
 Xaa Val Glu Thr Cys Val Ser His Lys Gln Asn Gln Lys Trp Ala Leu
 165 170 175
 Tyr Gly Asp Gly Ser Ile Arg Pro Lys Gln Asn Arg Asn Gln Cys Leu
 180 185 190
 Thr Cys Gln Lys Asp Ser Val Ser Thr Val Ile Asn Ile Val Ser Cys
 195 200 205
 Ser Ala Gly Ser Ser Gly Gln Arg Trp Val Phe Thr Asn Lys Gly Thr
 210 215 220
 Ile Leu Asn Leu Lys Asn Gly Leu Val Leu Asp Val Ala Gln Ser Asn
 225 230 235 240
 Pro Ser Leu Arg Arg Ile Ile Ile Tyr Pro Ala Thr Gly Lys Pro Asn
 245 250 255
 Gln Met Trp Leu Pro Val Pro
 260

<210> 13
 <211> 357
 <212> DNA
 <213> Viscum album coloratum

<220>
 <221> misc_feature
 <222> 331
 <223> n = any nucleotide

<400> 13
 gccagattca atcccatcnt gtggaggctt cgccggcaaa ttaacagtgg ggagtcttct 60
 ccaccaaaaca tgtacatgct cgagctggag acgagttggg gtcgacaatc cacccaagtc 120
 cagcagtcca aggatggcat ttttaatacc caaataagat tgcagatttc cgccggtaac 180
 ttgtgacgn tgagcaatgt tcgcgacgtg atctccagct tggcgatcat gttgttcgaa 240
 tgcagtggtc ggccattctc ctctctcgac cacccttcgc cgtgtctcct aaggtccgtc 300
 gtggatgcgg ccaacgagt cacctgcact ntttcgaac ccaccgtgcg catcgta 357

<210> 14
 <211> 119
 <212> PRT
 <213> Viscum album coloratum

<220>
 <221> misc_feature
 <222> 111
 <223> Xaa = any amino acid

<400> 14

Ala Arg Phe Asn Pro Ile Xaa Trp Arg Leu Arg Arg Gln Ile Asn Ser
 1 5 10 15
 Gly Glu Ser Ser Pro Pro Asn Met Tyr Met Leu Glu Leu Glu Thr Ser
 20 25 30
 Trp Gly Arg Gln Ser Thr Gln Val Gln Gln Ser Lys Asp Gly Ile Phe
 35 40 45
 Asn Thr Gln Ile Arg Leu Gln Ile Ser Ala Gly Asn Phe Val Thr Xaa
 50 55 60
 Ser Asn Val Arg Asp Val Ile Ser Ser Leu Ala Ile Met Leu Phe Glu
 65 70 75 80
 Cys Ser Gly Arg Pro Phe Ser Ser Leu Asp His Pro Ser Pro Leu Leu
 85 90 95

Gly Ile Glu Glu Leu Ile Gln Ser Val Ser Ala Leu Arg Tyr Pro Gly
20 25 30

Gly Ser Thr Arg Ala Gln Ala Arg Ser Leu Ile Ile Leu Ile Gln Met
35 40 45

Ile Ser Glu Ala Ala Arg Phe Asn Pro Ile Phe Trp Arg Ala Arg Gln
50 55 60

Tyr Ile Asn Ser Gly Glu Ser Phe Leu Pro Asp Met Tyr Met Leu Glu
65 70 75 80

Leu Glu Thr Ser Trp Gly Gln Gln Ser Thr Gln Val Gln Gln Ser Thr
85 90 95

Asp Gly Val Phe Asn Asn Pro Phe Arg Leu Gly Ile Ser Thr Gly Asn
100 105 110

Phe Val Thr Leu Ser Asn Val Arg Asp Val Ile Ala Ser Leu Ala Ile
115 120 125

Met Leu Phe Val Cys Arg Asp Arg Pro Ser Ser Ser Asp Val Arg Tyr
130 135 140

Trp Pro Leu Val Ile Arg Pro Val Leu Glu Asn Ser Gly Ala Val Asp
145 150 155 160

Asp Val Thr Cys Thr Ala Ser Glu Pro Thr Val Arg Ile Val
165 170



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